Balloon-Assisted Enteroscopy: A Window to Small Bowel Polypectomies in Peutz–Jeghers Syndrome

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Abstract

Peutz–Jeghers syndrome is an autosomal dominant inherited polyposis disorder where diffuse characteristic gastrointestinal polyps, mainly involving the small bowel, coexist with mucocutaneous pigmentation. Until the advent of balloon-assisted enteroscopy, intraoperative enteroscopy and surgical treatment were the sole treatment options for patients with Peutz–Jeghers syndrome. Balloon-assisted enteroscopy, allowing direct visualization of the small bowel and therapeutic maneuvres, paved the way for nonsurgical small bowel therapy. In the context of patients diagnosed with Peutz–Jeghers syndrome, balloon-assisted enteroscopy with polypectomy allows prevention of polyp-related complications such as intussusception/obstruction or bleeding and reduces the need for future operative polypectomies and either elective or emergent laparotomies, thus avoiding the risk of multiple enterotomies or small bowel resections leading to short bowel syndrome. Furthermore, clearance of small bowel polyps could potentially decrease malignancy risk, although low, by removal of precursor lesions.

Here different small bowel polypectomy techniques are described in a patient affected by Peutz–Jeghers syndrome presenting with multiple jejunal polyps detected at prior videocapsule endoscopy surveillance. This article is part of an expert video encyclopedia.

Keywords

Balloon-assisted enteroscopy; Enterscopy; Hamartomatous gastrointestinal polyps; Peutz–Jeghers syndrome; Polypectomy; Videocapsule endoscopy; Video.

Video Related to this Article

Video available to view or download at doi:10.1016/S2212-0971(13)70090-6

Technique

Anterograde single balloon enteroscopy.

Materials

- Endoscope:
  - SIF-Q180; Olympus Optical Co., Ltd., Tokyo, Japan.
- Electrosurgical unit:
  - ERBE ICC 200; ERBE Elektromedizin GmbH, Tübingen, Germany; setting Endocut mode: Autocut Effect 3 120 W, Auto COAG Forced 40 W.
- Accessories:
  - Disposable injection needle, 25 gauge, 230 cm; Olympus Medical Systems Corp., Tokyo, Japan.
  - Disposable electrosurgical snare, SD-210U-10, 230 cm; Olympus Medical Systems Corp., Tokyo, Japan.
  - Disposable electrosurgical snare, SD-210U-25, 230 cm; Olympus Medical Systems Corp., Tokyo, Japan.
  - Olympus long clip; Olympus Medical Systems Corp., Tokyo, Japan.
  - Endo Jaw disposable biopsy forcep, FB-210U; 230 cm, Olympus, Natick, MA, USA.

Background and Endoscopic Procedure

The case pertains to a 26-year-old female diagnosed with Peutz–Jeghers syndrome at the age of 6 and requiring at the age of 16 an emergency resection after intestinal intussusception. She underwent regular upper and lower gastrointestinal endoscopies with endosocopic removal of gastric hamartomatous polyps, whereas lower endoscopies were always negative. Patient was referred for small bowel surveillance and underwent videocapsule endoscopy (VCE), revealing multiple jejunal polyps measuring approximately 5–35 mm. Based on VCE results, patient was scheduled for single balloon enteroscopy with oral approach. Anterograde single balloon enteroscopy was performed under general anesthesia with endotracheal intubation. Despite postoperative adhesions, deep intubation of the mid-jejunum was fairly easily achieved. Proximal jejunum polyps detected on VCE were identified at enteroscopy and given their size, features, and location depth addressed with different alternative polypectomy or mucosectomy techniques. In detail, thin stalked polyps were safely removed using hot

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snare polypectomy, sessile polyps were retrieved with *en bloc* submucosal saline injection polypectomy, and larger polyps required endoscopic submucosal piecemeal resection. The diathermy used for hot snare polypectomy and mucosectomy (ERBE ICC 200; Tübingen, Germany) was set in endocut mode (Autocut Effect 3 120 W, Auto COAG Forced 40 W). Endoclip-assisted snare polypectomy was preferred for polyps with short and broad peduncle. Finally, minute polyps were successfully removed by forcep biopsy. Histology confirmed all the polyps to be hamartomatous. The procedure was performed under fluoroscopy control, reducing the risk of perforation. Fluoroscopic assessment at the end of the procedure proved the absence of bowel leaks. Despite prior surgical intervention, procedure was successfully completed and the postoperative course was uneventful.

Peutz–Jeghers syndrome is an inherited disease characterized by mucocutaneous pigmentations associated with diffuse hamartomatous gastrointestinal polyps, mainly occurring in the small bowel. In the course of the disease, patients are prone to develop polyp-related complications consisting of bleeding, intussusceptions, and small bowel obstructions, often requiring an emergency laparotomy. Moreover, there is an age-dependent increased risk for small bowel cancer.[1] The small bowel tropism of Peutz–Jeghers polyps makes their detection and treatment a challenging issue. Current guidelines recommend scheduled small bowel surveillance with capsule endoscopy and endoscopic clearance of significant polyps given their potential for development of cancer and intestinal obstruction.[2] There are few data to support the use of balloon-assisted enteroscopy for small bowel surveillance, but the technique expands the therapeutic options for the management of small bowel lesions found on other gastrointestinal exams.[2] In particular, balloon-assisted enteroscopy permits endoscopic treatment of small bowel bleeding lesions or polyps. In the context of Peutz–Jeghers syndrome, small bowel enteroscopy allows removal of proximal or distal small bowel polyps detected by other means and offers the possibility of preventing polyp-related complications, in particular intussusceptions, thus avoiding, reducing, or postponing the need for elective or emergency surgery.[3] Altered anatomy or adhesions due to prior surgical intervention might theoretically limit the successful completion of balloon-assisted enteroscopy by preventing progression of the enteroscope. Successful and safe enteroscopic polypectomy of small bowel polyps by balloon-assisted enteroscopy in patients with Peutz–Jeghers syndrome, even with prior laparotomies, has been reported in the literature.[4]

Key Learning Points/Tips and Tricks

- Enteroscopy allows advancement of an endoscope deep into the small bowel for both diagnostic and therapeutic procedures, and in the setting of Peutz–Jeghers syndrome meets two needs: treatment of significant small bowel polyps at risk of intussusception/obstruction or bleeding and cancer prevention by removal of precursor lesions.
- Successful balloon-assisted small bowel polypectomy is feasible and safe but requires expertise in advanced therapeutic gastrointestinal endoscopy.
- Depending on their size, typology, and location, small bowel polyps can be removed with different polypectomy techniques.

Complications and Risk Factors

Risk of complications such as bleeding and perforation have always to be kept in mind. Adhesions or altered anatomy in patients with abdominal surgeries may hamper scope progression.

Alternatives

- Intraoperative enteroscopy.
- Surgical resection.
- Push enteroscopy.

Scripted Voiceover

Time (min:sec)	*Voiceover text*
00:01	In this 26-year-old patient suffering from Peutz-Jeghers syndrome, small bowel surveillance through videocapsule endoscopy demonstrates jejunal polyps.
00:15	The patient is scheduled for anterograde enteroscopy with multiple jejunal polypectomies. The small bowel is fairly easily intubated as far as the mid-jejunum. Incipient polyps can easily be removed by cold biopsy.
00:40	In the proximal jejunum a 10 mm sessile polyp is detected. Sterile 0.9% saline solution is injected under the mucosa in the area surrounding the polyp using an endoscopic 25 Gauge needle. This creates a fluid cushion for successful *en bloc* snare resection.
01:08	Deeper in the jejunum a stalked polyp, measuring approximately 15 mm and showing a long thin stalk, is safely removed by snare polypectomy using electrosurgical blended current.
01:36	Deep into the proximal jejunum a sizeable stalked polyp, measuring approximately 35 mm, is identified. Larger polyps may impose endoscopic piecemeal resection. Using a 25 mm polypectomy snare a piecemeal resection is successfully achieved. At the end of the procedure hemostasis at the cutting edge must be carefully checked with water flushing.
02:13	In the mid-jejunum a polyp with a large short peduncle is cautiously removed after prophylactic mechanic strangulation of the peduncle with a long hemoclip. Polypectomy technique has to be tailored on polyps' size, configuration, and location.

References

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